

FIG. 10a illustrates a switch mode power converter in a two-transistor forward topology according to an alternative embodiment of the present invention.

FIG. 10b illustrates a timing diagram of the waveforms of voltages and currents of the converter of FIG. 10a at different points in time.

5 FIG. 10e illustrates the logic diagram of the converter of FIG. 10a.

FIG. 11a illustrates a switch mode power converter in a forward-flyback topology with a current-doubler, synchronize rectification, and active clamp topology according to an alternative embodiment of the present invention.

10 FIG. 11b illustrates a timing diagram of the waveforms of voltages and currents in the converter of FIG. 11a at different points in time. FIG. 12a illustrates a switch mode power converter in half-bridge topology according to an alternative embodiment of the present invention.

FIG. 12b illustrates a timing diagram of the waveforms of voltages and currents in the converter of FIG. 12a at different points in time.

15 FIG. 12c illustrates a logic diagram of the converter of FIG. 12a.

FIG. 12d illustrates a timing diagram of the logic diagram of FIG. 12e at different points in time.

DESCRIPTION

20 The present invention is directed to a switch mode power converter for supplying an output power to a load. The switch mode power converter employs one or more synchronous rectifiers as secondary switching devices. In one preferred embodiment, the synchronous rectifiers may be placed in parallel with discrete diodes. During light load operation, the synchronous rectifiers are disabled and current is conducted in the body diodes of the synchronous rectifiers or in the parallel discrete diodes. In one preferred embodiment, the power
25 converter also includes a bias winding for producing a bias voltage representative of the output power, and a control circuit. Light load conditions may be detected using the bias voltage. The control circuit is for (a) determining the rate of change of the bias voltage, (b) characterizing the rate of change, and (c) controlling the control input as a result of the characterization (b).

30 The present invention provides the benefits of using synchronous rectifiers as secondary switches during normal load conditions. In addition, the present invention allows for the use of